„Heating & Power from Straw“

Conception for sustainable Energy Supply in Combined Heating & Power Plant by using the Renewable Energy Source Straw

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Belgrade, 22nd April 2015

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The Hermes EPC Group

..established a team of German and British Experts as an **Engineering Center of Excellence** for renewable energy to **develop infrastructure and power plant projects in many different countries**.

We **promote the restoration of healthy human habitats** with clean soil & water and clean energy in the public interest. The main focus is on biomass power plants (straw, wood chips), but also waste gasification power plants, wind turbines et cetera.

Entities of Hermes are located in

Hermes EPC Group LLP – United Kingdom in 55 Sedgeford Road, London W 12 ON A
Hermes EPC Group LLP – Germany in Bösenberg 27, 46514 Schermbeck
Comming Soon:
Hermes EPC Group LLP Serbia
Hermes EPC Group LLP Czech Republic
Hermes EPC Group LLP Cameroon

Experts are all self-employed engineers and scientifics (like hydrogeology, geology, electrical, mechanics, chemical, structural engineering, architecture, environment and natural scientists) who are internationally established and living. All authorities in there fields with long experiences.

Specials: Hermes EPC Group - Member of BBE Bundesverband Bioenergie Germany

Important issues for generation of Heating & Power by Straw

- Straw is a by-product of cultivation of grain & therefore no superseding of production of food on agricultural areas!
- High energy supply safety {security} due to the regional availability
- Contribution to the reduction climate-damaging emissions
- Creation of value for farming and support of the rural development

Important issues ….. (2)

- One arises at repatriation of the **straw ash** from thermal power plant as a **fertilizer** lasting a circulation economy

- The special characteristics, however, of burning straw are of great importance: under others the inclination the scorification by alkalines (low melting point) and the corrosive components (e.g. chlorine) require a special technology.

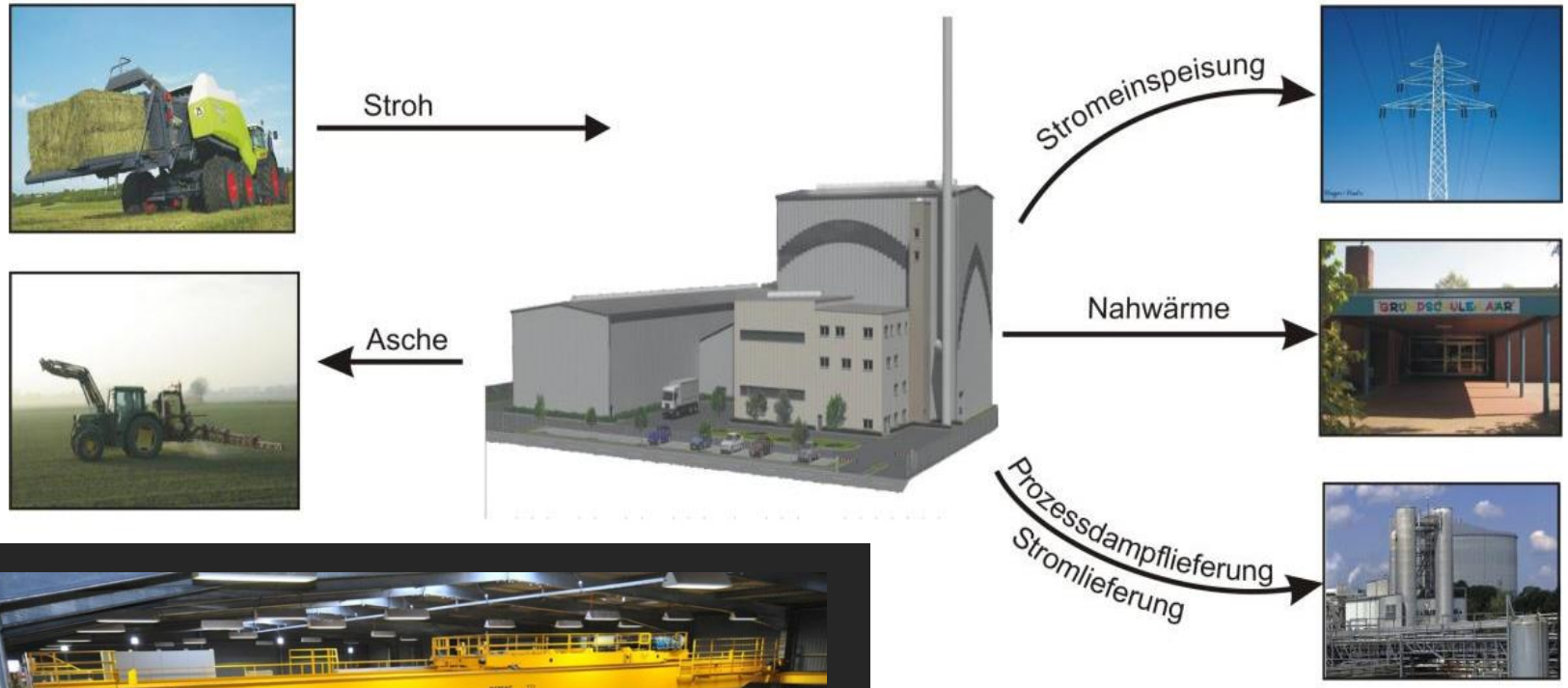
- … but there are approved solutions for it … (next slide!)

Technology of a Straw Power Plant

- Technology started in Denmark
- Technique to the incineration on a water-cooled vibration grate is approved and for over 25 years in use Europe-wide.

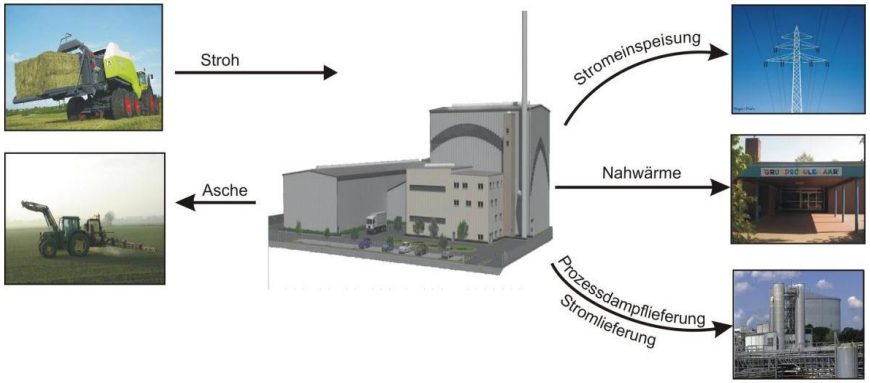
One of the most modern and efficient straw-fired CHPs is in Emlichheim (Germany) since 2013 in operation. That Technology was developed further in many areas e.g. the use of different bales of straw concerning dimensions.

Technology of a straw-fired Power Plant



- efficient energy utilisation
- low emissions
- innovative CHP-concept
- flexible Strawale dimensions
- optimal fuel feeding

Our straw-fired powerplant Emlichheim/ Germany in Operation (2014)



See actual Video from 2014

Video StrohHKW BEKW Emlichheim\BEKW_Englisch.mp4

Economic figures for a Construction of a straw-fired 49,8MWe CHP

CHP Data

- Electrical capacity 13,5 MW
- Heat capacity 30 MW
- Fuel consumption Biomass - straw
- Emission limits beyond limit values (TAL)

Conditions for operation

- Operation-time 8000 h/ a
- Electricity production 80.000 MWh/a
- Heat production 120.000 MWh/a
- Straw consumption 75.000 t/a
- Electricity price 138,20 €/MWh
- Heat price 20 €/ MWh
- Cost for straw in bails 45 €/t

Economic activities

- Sell of electricity & feed in the grid & sell of heat?
  Answer: Fix-price-contract with local government!
- Supply with straw?
  Answer: By a long term Contract with local government
  to supply with straw for 10 years

Investment

- Investment total: ~ € 50.000.000

Cash Flow

- Turnover for 1. year: ~ €/a 13.500.000
- Total operating cost 1.y: ~ €/a 5.500.000
- Profit for 1. year: ~ € 1.700.000

Conception and Plannings for straw-fired powerplants

Hermes EPC is offering:

- **Advisory & Consulting services**

- **Preparation of feasibility studies - among others**
  - > site-/location-analyses (straw, warmth, straw, infrastructure),
  - > check of legal framework conditions
  - > outline of a technical basic concept
  - > determination of the economic bases
  - > eneconomy considerations and sensitive analyses

- **Realization of straw-fired combined heat & power station projects**
  - > creating of the corporate environments
  - > make of financing concepts
  - > examination and acquisition of possible promoting possibilities
  - > engineering of project-planning over erection up to the successful commissioning

Thanks for your attention!
&
We enjoy your visit on our platform - welcome!

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